THE TEACHING OF GEOGRAPHY TO CHILDREN

LILY WINCHESTER

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THE TEACHING OF GEOGRAPHY TO CHILDREN

BY

LILY WINCHESTER

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WITH A PREFACE BY

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TO

MY MOTHER

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PREFACE

THE claim is now being made for Geography that, rightly understood and rightly taught, it forms a most valuable introduction to the duties, responsibilities, and privileges of citizenship. It trains and develops the faculty of sympathetic imagination, without which it is impossible to appreciate other points of view or to put oneself in the position of other people living in environments unlike one's own. It can engender precisely that attitude of mind and outlook on life which will have to become far commoner than at present if the democracies of the world are to learn the difficult art of collective living, and if the ideas underlying the League of Nations are to be translated into realities. But, while it is thus essentially a liberalising and humane study, Geography is, at the same time, eminently "useful" in the narrower and more utilitarian sense. Some knowledge of its principles, no less than of its data, is becoming

indispensable for many professions. The Civil Service, the Consular Service, and almost all departments of industry and commerce in this country stand to gain immensely by the systematic development of Geography as an integral part of the national system of education. A great need of our time is the evolution of a well-planned but yet elastic system by which, on the basis of sound Geography and History teaching in the elementary and secondary schools, the problems of national and international citizenship and commerce can be seriously tackled in the new continuation schools and in the various branches of Adult Education, such as the Workers' Educational Association.

But, without a sound basis, no effective superstructure of this kind can be raised. From a wide experience, I am convinced that teachers readily discern and often eagerly appreciate what a magnificent instrument they have in Geography for developing both the aptitudes and the vision of their pupils. But I also know that they are frequently puzzled as to how the foundations should be laid. So considered, the problem of Teaching Geography to Children is a highly important one. Only those are really qualified

to give advice on the subject who have at once studied intimately child psychology in relation to the subject-matter of Geography, and themselves possess a clear vision of what they want the children to make of Geography when they have become grown men and women. Miss Winchester is fortunate in combining these two essential qualifications. What she has to say on the beginnings of instruction in Geography is the outcome of her experience in both School and University teaching. If she can convey to the readers of this little book a small part of the profit and inspiration which they would derive from watching her actually teach a class of small children, I feel sure that many hundreds of teachers of Geography will feel deeply indebted to her.

PERCY M. ROXBY,

Professor of Geography in the University of Liverpool

February, 1920

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THE TEACHING OF GEOGRAPHY TO CHILDREN

I

INTRODUCTION

Geographical Nature Study

THE children whom the writer has in view are those to whom the earliest systematic lessons in Geography are given. It is assumed that these lessons will be given after the children have reached the age of six, and will continue till they are ten.

Bearing this in mind, let us consider some of the results which we wish to attain in teaching Geography to these little ones.

First, one of the most important aims is so to train the child that he may be helped to realise some of the marvels of the earth on which he lives, to see these for himself, to come into contact with them through his own observation, and to discover for himself that the world teems with mysteries. How do grains of sand make rocks,

and why do rocks differ in colour and appearance? What are the clouds, why do they move, and what makes them change? We want to train him so that his attitude towards all these mysteries may be at once reverent and intelligent.

Second, we want to help the child to regard himself as a unit in a great family, and his home as but one among the myriad and varying homes of the world's races. We want him to recognise that he is as closely connected with a member of a primitive or decadent race as with one of the advanced races, inheriting an age-long culture. We want to help the child to look out on the world with the same feelings of indignation at oppression or injustice and of pleasure in happiness, as those with which he regards injustice and happiness in his own home. These feelings cannot be developed too soon. The child should begin so early to think of the distant races in terms of the brotherhood of man that this consciousness of fellowship will become instinctive.

So our aim is twofold :—

1. To teach him to appreciate something of the physical environment in which he lives.

2. To develop in him a broad world outlook and sympathy.

Next let us examine some of the characteristics of little children. Among the greatest and most

widely spread of these characteristics are keen interest, the love of colour and movement, the delight in adventure, together with all the other joys of imagination. But accompanying this keenness of interest, there is often a lack of concentration, an inability to be kept mentally alert for a long period, a desire for frequent change. There is a delight in repetition—a repetition which appears to us monotonous, but which children love and continually demand. It is among these children that we find the power of memorising very fully developed.

How did we teach these imaginative restless little ones in the days gone by? We gave them maps to look at, which they did not understand, scolded them if they fidgeted, and insisted on their remembering lists of names. Fortunately the days of such teaching are sinking unhonoured to their grave. To-day it is possible to stimulate the children's interest, to foster and guide their love of adventure, to use their power of memory, to develop it by means of repetition, and to bring all these into the service of training future scholars and future world-citizens. With such a wealth of material at our command surely it behoves us to utilise all its possibilities and to see to it that no lack of effort on our part shall prevent the children from entering into their

inheritance, and from attaining a true national citizenship and broad world-sympathy with other peoples. But we must not lose ourselves in the effort to train the sentiment of the children. Accuracy in fact and in impression is essential in these early lessons.

We must so teach that when the child attains manhood and meets life in the street or in the jungle his most careful searching of memory shall yield no theory or statement which conflicts with the facts of his adult experiences. Only the greatest accuracy will stand this fiery ordeal.

What then are the means which can be used for attaining our twofold aim?

There is a general consensus of opinion that the best way to begin to teach Geography to little children is by means of carefully prepared lessons on Nature Study: Nature Study, that is, on the Geographical side. In setting about our task of training national and world-citizens we shall best achieve our aim by concentrating in the early stages on that which is near, both mental and physical.

When we begin with Nature Study, it is possible to bring Geography within the grasp of the dullest and most backward of our children. Nature Study appeals strongly to little children, for every child delights to examine what is around

him ; he loves to poke into corners, to gather flowers, to pick up pebbles. In taking advantage of this natural tendency we are linking Geography to the fundamental instincts of the child, and thus are advancing towards our goal by a pathway indicated by Nature.

In order to get the best results from Nature Study, it is useful to divide the class into a number of small groups, each with its own leader, which can proceed to examine and discuss the subject of the day's lesson. After a sufficient time for investigation has been allowed, each leader may give to the class the result of the group's observation. For purposes of accuracy, and in order to avoid reliance on memory alone, these observations may be written down by the leader from the suggestions of the group, provided the children be old enough. The class can then decide which of the leaders has given really valuable suggestions, and these should be written from dictation in notebooks specially kept for the purpose. The particular advantage of this system is that the work is done by the children themselves and their own ideas are noted and retained for memorisation, the competition among the groups being sufficiently keen to maintain a high level of investigation. As is always the case when the children are allowed to do the work and

the teacher simply guides, the children easily remember what they have themselves observed and noted. Group work is not only useful in the early stages of teaching, but can be employed with good results throughout the school.

When we begin to think of Nature Study from this point of view, that is, when we want it to lead directly to Geography, we must enlarge our idea of the subject, and must make it a little more worthy of the name.

For example, instead of beginning to study an individual flower or a single leaf, we can help the children to examine a plot of ground and to discover the plants and animals that live together, to study their special adaptations ; *e.g.*, the great advantage of long fibrous roots to the grass, of the rosette leaves to the daisy, of the tall upstanding flowers to the plantain, and of the winged seeds to the dandelion. Only when these vital facts are rightly considered in the light of communal existence do we obtain a correct idea of one of Nature's swarm areas. Or we can help the children to discover the differences between two garden beds, one of which faces the south and the other the north, and to study the development of their separate members at different times, the various insects which visit them, and the animals which live in them. By this means it

will be possible for the children to gain ideas of aspect, of soil, of over-crowding, and to learn, almost unconsciously, something about "Plant Associations" and the laws which govern them. Selected trees also may be observed during each of the four seasons, and drawings made by the children may be compared with photographs taken of these trees; thus a court of appeal would be formed, whose verdict would be final.

When the weather is unfavourable or when other circumstances prevent outdoor observation, plants or animals may be examined in the class-room and studied as individuals, and their various characteristics carefully noted.

In all these lessons it is of the highest importance that the children's own observations should be obtained and collated. The pernicious habit of showing the children a picture of a plant or an animal and then telling them what they should see in the picture, cannot be too strongly condemned.

Among other phenomena to be studied in Geographical Nature Study are:—

1. *The Sun.*—The children should be taught to observe where it sets and rises, to note these changes in position during the year, to compare the variations in height through the day with the variations in heat accompanying them,

and to note the duration of darkness at different seasons. These observations provide ample material for later comparison and contrast; for example, the day is always cool when the sun is only just visible (*i.e.*, when it is about $23\frac{1}{2}^{\circ}$ above the horizon)—how cold must the country be where at noon on midsummer day the sun is only at this height! How warm are our days when the sun is high in the sky, but how intense must be the heat in those places where the sun at noon is immediately over head! If we find a night of 16 hours dreary, what must it be in a place where the darkness lasts not for 16 hours but for 6 months!—and so on.

2. *The Stars.*—To introduce this study, particular groups should be selected, notably the constellations of the Great and the Little Bear, Orion and the Pleiades. The two first named may be used later for lessons on direction, and it is well that the children should early become familiar with the great star groups which have been important throughout the history of the race. It is helpful to name and study more closely some of our sister and brother stars which with us circle round our great centre, the sun. Lessons on these give an opportunity for showing the true position of the Earth Star in the Sun's great family, *viz.*, that of one of the

small members. In this connection it should be observed that while Jupiter and Saturn have many moons, the Earth has but one. But while our poverty in moons is only too clear, the study of our one moon yields rich results, and the change in the phases of the moon is a source of unending delight to the little ones, to whom it is almost a living entity. Could we be better off if we had many moons?

In some schools it is possible for lessons on the stars to be given at night. Where this is possible it should be done, as one such lesson during the autumn or spring term, when the darkness comes early, would be found sufficient to awaken interest and stimulate observation. But in schools where even this occasional lesson is impossible, very clear descriptions as to position and appearance of these constellations or planets might be given, and the children asked to make their own observations and to report to the class later. Such independent study carried out under the supervision of, but not immediately controlled by the teacher, affords useful training in independent investigation by the child.

3. *The Wind.*—Let us now consider the wind. The points to be emphasised here are the gradual increase and decrease in the force of each gust, which make up a day's air movement and the

continual change of direction evident from day to day; the usual consequences of winds from special directions; and the wheel-like movement of the air generally, resulting from the fact that the winds blow from every point of the compass. All these yield useful observations on which later study of our own west winds with their constant variation and cyclonic movement can be satisfactorily based.

4. *Clouds and Rain.*—When we pass on to consider the rain, questions such as the following may be encouraged: What is rain, whence does the water come, what purpose does it serve, what happens to it after it has fallen? The greatest care should be bestowed on training the child to answer these for himself.

The study of the clouds is part of rain study and affords ample opportunity for the cultivation of the appreciation of beauty.

5. *Earth Study.*—The observation of the earth's surface will follow, and here it is useful to allow the children to collect and bring to school any rock particles or pebbles, and to give a series of lessons dealing very simply with some of the obvious points in rock structure. Granite, for example, should be studied with its welter of particles and its variety of colours, and the children's imagination stirred till they can perceive

how it has been made—in how fierce a heat it has been fashioned until the very rock boiled; then they can be led to understand the slow cooling which followed and lasted for ages until crystals formed and the granite became a solid substance.

The sandstone rocks may be examined, and among the tiny grains easily rubbed off will be found some of the particles belonging to the granite rocks now discovered in a new setting. From these sand grains it is possible to create in imagination the sand storms which swept over the areas in which the sandstone rocks are found, and from the size of the embedded pebbles to judge of the strength of the terrific storms which visited the Sahara of that day. These lessons are of great value; they help to stimulate reverence, which is essential in all true Nature Study and is sometimes most easily roused by the contemplation of objects whose age is immeasurable.

In such a treatment of Nature Study the foundations for later Geography work may be laid. The lessons on plants and trees lead to the fuller study of vegetation; those on sun, wind, and rain, to a clearer realisation of climate; while the observation of the home rocks, coupled with the action of weathering, is a preliminary to the study of land forms. These Nature Study

lessons are not only useful as an introduction to Geography; they should be continued after systematic work in Geography has been begun, so that they may provide that "experience" which is the essential starting-point for all true realisation of the home life and environment of other children in other lands.

II

Geographical Teaching in its Earliest Phases

The Study of the Home Environment of other Children in Typical World Areas

ONE definition of Geography describes it as the Science which deals with the Earth as the home of Man. Nearly every little child has a home, and is familiar to that extent with this idea. When children are happily placed, the home with all its activities is the centre of their sphere, and they are predisposed to imagine the homes of other children far away. The advantages of this line of thought are many ; it helps to create the sympathy essential for comradeship, and it is the beginning of that broad world-outlook which every Geography teacher should help to develop, especially during the present crisis, when all training should aim at the true appreciation of citizenship. There are other obvious advantages accruing from this biographical method.

The family is an entity, it is also a community in miniature. The father's work is typical of the society to which he belongs, and can be made to illustrate the special work carried on by men living in his special surroundings. His poverty or wealth represents the status of this society; the mother's work illustrates to some extent the civilisation of the community; the games and the work of the children indicate yet another side of communal life. It is possible to give, without being wearisome, many details in such a picture of home life. All these people should be named, for the individuality of a person is more vivid if he has a name and if he is spoken of by name in the lessons. Such names are often difficult to discover, but they are essential. (Missionary literature is very useful here and frequently provides just such details.) Other essentials are connected with the clothes the people wear, the houses they live in, the food they eat, the kind of country they see, and the stories the mothers tell to their little ones (abundantly preserved for us in the folklore of all nations). Place names should be freely used, *e.g.*, the town in which the people live, the river near their town, and the sea into which the river flows. There must be nothing indefinite in these early lessons. Names of places must be as correctly memorised as under

the old system of Geography teaching ; the vital difference being that, under the new methods, names recall real places surrounded by their own special atmosphere, and are parts of mental pictures in which people live and move. It is more and not less necessary that all names given should be correctly remembered. In these lessons the ideal is to make the people we talk about live, and so to describe the Indian or Eskimo father that the children will see him moving swiftly along on his snow shoes, or hear his shout as he tows home the seal behind his kayak. Let the little yellow or brown or black babies be so real that the little English children will be very sorry for them when they cry ; but before we can make them real to our children they must be real to us. One object in presenting vivid pictures of lives passed under conditions so different from those of the children we teach should be to make them think of foreign habits and customs as quite natural in the circumstances. The Eskimo mother licking the dishes in order to wash them may be the subject of amused, perhaps rather shocked interest, but not of ridicule. By teaching of this kind the long-standing reputation of the English as a discourteous people, intolerant of foreign ways, may some day be removed.

Suppose you want to teach the children about

the people living on the banks of the river Congo, one of the best ways to do this is to imagine that you live in the home of one of the families there —that you are admitted to the family circle, privileged to enter into its life, to share its sorrows and joys, to help in its work. If it is possible to set about collecting data for the lessons and then to give the lessons from this standpoint, there will be no difficulty in cultivating the sympathy of the children with the peoples of the Congo. To illustrate the point; in a certain Congo home the father is called Basuli, the mother's name is Ekila, their daughter is Zoa, and the baby boy is Mopaka. They get up very early in the morning in this home in Congo-land: dressing—that is, putting on clothes —does not take a long time, it is much too hot in these countries to wear many clothes, so that any dressing that has to be done is done quickly. The fire is first attended to, for every good housewife builds up the fire each night, so that it shall not die out before morning. Mother has much to do—the hearth must be tidied and the room swept, though the floor is all of earth. Then she gets breakfast ready, a few roast ground nuts or a little cassava. Father has also been busy before he is ready to have breakfast, and, just as mother sweeps the floor of the house,

so father sweeps the compound and makes it tidy ; then he proceeds to wash himself. Water for washing is kept in a calabash ; father fills his mouth with water, and then allows a stream of this to flow from his mouth over his hands ; next he washes his face and brushes his teeth, and last of all he does his hair.

When breakfast is over, mother and Zoa go down to the spring in the village to bathe and to fill their calabashes with water. Baby Mopaka does not go with his mother, but is left with other babies in the care of some older children. (I hope the babies are not naughty while mother is away.) Presently mother and Zoa return with their calabashes full of water. Now it is time for baby to have his bath, and mother washes him very carefully. Of course, baby does not always like it ; of course, he screams and kicks when he does not want to be washed.

Father has been preparing for his day's work, and by this time he is ready to start. It is market day and he is going to market ; he takes with him some plantain or dried meat, perhaps a few sheep or goats, or even some fowls. While he is away, mother goes to work on the farm and Zoa helps her. Baby is not left behind this time ; very carefully mother puts him to sit on her hip or on her back, and ties him securely

with a cloth which she wraps round herself and baby; he may be uncomfortable, but he is quite safe.

There is no need to do much heavy digging on the farm; the soil is generally very fertile and needs little preparation; but mother and Zoa have much weeding to do, and weeding is very tiring when the sun is right overhead and the day very hot.

At last they have finished for the day; evening is coming on, and mother and Zoa, now very tired, go home, taking with them something nice for their own supper and for father, who will soon be back from market. How pleased every one will be if father has had a successful day and exchanged his goods to advantage![1]

In order that these lessons may be effective, three points need special attention: (*a*) Direction, (*b*) Distance, (*c*) Weather.

(*a*) *Direction.*—It is essential to establish clearly one direction of the compass and from this to determine the others. There are many ways in which this can be done. Sometimes it may be wise to begin with the south, where the sun is when at its greatest height, and from this to get the other directions; a shadow thrown by

[1] Data from "Life on the Congo," by Dr. Holman Bentley (Religious Tract Society).

a stick at midday will give a north and south line.

Whenever possible, the position of the north star and the pointers should be indicated and the children accustomed to discover direction by night as well as by day. Direction should be a developing consciousness. It is essential; and the children will learn it best by constant revision, rather than by a series of lessons dealing with it alone. One thing is evident, and that is, if we attempt to isolate direction and take it apart from everything else, our work will be tiresome to us and to our little ones. Children who are a little older, *i.e.*, nearer to 10 than to 7, may be led to appreciate certain changes which always follow changes in direction; *e.g.*, with us the farther north we go, generally speaking, the colder it is, and the farther south, the warmer. These changes should be related to variations in the sun's altitude. Such facts are best remembered in connection with the stories of the peoples who live in these regions.

One other point is important. Cities and countries are real and have a definite situation. To help the children to realise this, the direction in which these places lie should be pointed out to them, not in accordance with the artificial and pernicious habit of the fixed north at the top of a

map, but in accordance with the real direction, which would eventually lead to the places.

(*b*) *Distance.*—The true appreciation of distance is of vital importance. In Geography the idea of remoteness never separates, but rather adds charm. Distance is best given in terms of time. The important factor is not so much the distance in miles or yards as the time it takes to walk that distance. Distances may be measured on sea as on land in this way; the only difference is that we must imagine we can walk over the sea. This presents no difficulty to little children. (Here it is possible to add the time a boat would take to do the same journey—but almost in a parenthesis, the aim being to give a uniform idea of distance, which can be attained only by a uniform method.) The essential is to discover the definite time it would take the particular class with which we are dealing to walk a definite distance. It is useful to establish the average distances covered in one week. A unit of forty to fifty miles is suitable, especially as in many continent maps the distance is represented by one inch; one inch therefore would represent one week's journey. It is necessary to test distances, with little children continually, and with older ones frequently. It is very difficult to think in large figures and to imagine

that a great distance can really be great, when you see for yourself it extends for a few inches only as represented on a map. How little it means to older people to be told that the Atlantic between Liverpool and New York is 3000 miles wide! How very little then it must mean to a little child, who has no experience of great distance and little power of comparison! Does it not give a better idea of the distance to say that if the child started to walk across the Atlantic to-day, supposing that were possible, he would reach New York about eighteen months from the day on which he started? And after all is this not the way in which the nomads of the desert, representatives of an earlier civilisation, always express distance? "How wide is the Sahara Desert?" you ask. "Nine months," they reply.

(*c*) *Weather.*—Weather is elusive in more ways than one, and is exceedingly difficult to make clear to little children. But no realisation of climate is possible without a clear comprehension of weather. The two factors important for little children to understand are temperature and rainfall: the other climate factors, such as winds, clouds, and sunshine, may be left until later. One of the best ways to introduce the question of temperature is to discuss the clothes the people wear. Clothes are dependent on

temperature, and temperature, to some extent, on the height of the sun at midday. The people whose normal dress consists of fur must live in a country where the cold is extreme; and a country whose summer noonday sun is never far above the horizon will have weather never warmer than our evening time.

Rainfall is more difficult to explain, and the question of clothing affords no help in its elucidation. Fortunately for English children English rainfall affords examples of many types. A very wet day may suggest the rainfall of some tropical areas; and a period of comparative drought, that of districts having deficient rain. Or again, rainfall may be approached by means of the vegetation of the district, or even in some cases, among the older children, by means of comparative measurement.

A more detailed study of land-forms soon becomes essential, and this naturally follows Nature Study lessons dealing with the rocks of the home district and with the effect of the weather on these rocks. The rocks we see are but great blocks of which the pebbles are minute representatives. Some of these rocks form hills, others make plateaus. On these hills and plateaus rain falls, and streams arise, which wear out channels in the rocks, sometimes removing so much of the

rock as to make a valley, sometimes seeming to leave the rocks unaltered. Where a variety of land-forms occurs and where it is possible to take the children to examine these under the supervision and inspiration of the teacher, the best results can be expected. But these ideal conditions are not often present, particularly when the children live in cities, and a few suggestions for the teaching of land-forms to city children may be useful.

First let us realise the position. We want the children to appreciate a range of mountains whose heights are covered with clouds, while the only hill they know is a steep street in their city. But the steep street is difficult for them to climb. This difficulty supplies the essential starting-point; we can introduce gradually pictures of steeper slopes, of higher hills, of great mountains, and accompany each of these by vivid descriptions, while we associate the descriptions of these world heights with the life of the people on them, emphasise the difficulty in ascending them, and describe the extensive views from their summits.

Similarly gutter streams illustrate on a small scale the principles which guide the development of great rivers, and open spaces may be found over which river channels in all stages of

development can be observed after a wet day. By studying these streams the children will learn that a river alters its course when an obstacle comes in its way, that there is a certain symmetry in its swings, that tributaries flow into it, that the mouth of such streams is an area split up into many tiny streams, separated from each other by minute areas of land. The children will learn from direct observation what is represented by such terms as source, bank, tributary, mouth, delta. From such "experience" they can go, as in the case of mountains just discussed, to greater streams and larger rivers, and learn something of the lives of the river peoples of the world,—the tiny streams they have observed providing the essential link. In some such way as this, even city children may be helped, by objects within their own reach, to acquire accurate ideas of great world forms. It is much better to let the little ones examine such objects for themselves at first hand rather than for the teacher to manufacture them for the children. The sand tray or the model must be very carefully used with little children, or their ideas of proportion will be incorrect. After all, is there not a danger, when the child makes a mountain out of plasticine and looks down at it from his own superior height, that he may imagine that a mountain is

less than he?—and is there not a danger of his under-estimating the dread expanse of the Sahara Desert, if he be allowed to consider it as occupying a mere sand tray, which is much smaller than his own classroom? Models can be used with great success, if this difficulty is appreciated and if pains are taken to avoid misconceptions in the minds of the children; but the difficulty is a very real one. Is it too much to ask that, in the future, the cinemas may lend us their help in trying to convey to the little ones accurate and living ideas of some unfamiliar parts of our great world's scenery? Perhaps in the future they will give pictures of great mountains, mighty rivers, and dreadful deserts, that shall be suitable to the intelligence of the children, and yet full of that colour, life, and movement so fascinating to the little ones. At any rate, if we train our children to appreciate these phenomena, they will come to demand a pictorial representation of them; and there could be no surer guarantee that the cinema will eventually be enlisted in the cause of true education.

III

Weather Teaching

THE best way to introduce weather teaching is by means of observation carried on as part of Nature Study, as this introduction is of great value in all the later phases of the study ; suggestions for such treatment will be found in the first chapter.

When the children approach the age of 10 their work should lead to more detailed and accurate observation, and more careful notes should be taken. Our aim at this stage is to help the children to lay accurate foundations upon which they may build later.

This more advanced weather teaching should be treated as a basis for Climate Study.

Of the three chief factors which make up climate, temperature, wind, and rainfall, temperature, except in a very elementary form, is the most difficult and calls for special treatment. The subject is discussed later, in reference to more detailed work with older children.

While correct ideas of temperature are difficult to convey, wind can be observed and these observations noted by the youngest children in the school. No one can walk about without being conscious of wind—it blows our clothes, it moves the trees, it drives the clouds along. What is this ever-present and invisible force? How does it move?

Wind is air moving from areas of high pressure to areas of low pressure, and the relation of these two determines the direction and force of the wind. While this is true, the fact to be discussed with children is not why does air move, but how does it move. A few experiments in the open made by the children will be very useful. Let them stand in the playground and hold out handkerchiefs, or place a piece of soft paper or a flag by an open window, and they will see how the air moves. At first the handkerchiefs hang loosely, then they begin to wave slowly; this movement becomes stronger and the handkerchief is pulled taut; then gradually the movement decreases until at last the handkerchief hangs loosely once again. Soon this whole process is repeated and the repetition of these movements lasts as long as the experiment is continued. This demonstrates the wave-like motion of the air. To put it in another way, the air moves in throbs.

Each throb is composed of three parts: a beginning in which air movement is gradual, a second phase of more intense movement, and finally a return to the original conditions. After a short interval, the sequence is repeated; there will often be two or three such throbs in less than five minutes. The air is in a perpetual state of throbbing unrest, and at any moment the throb may become intense, or on the other hand it may become scarcely perceptible. During any given five minutes, we have examples of miniature tornadoes and calms, and can discover how one of these tiny storms may develop from a slight air movement, or on the other hand may gradually cease to exist. There is something more than interest in such observations on air throbs; for by this means our west winds, with their continual changes, may be made to illustrate types of air movement found all over the world.

The effect of this throb-like movement upon plants merits special comment. In the initial stage the plant is gently swayed, and is thus prepared to withstand the strong gust of the second movement; while in the third stage it returns to its original position.

Again, further investigation shows that, in that air level where tiny plants and short grasses live, there is hardly any movement. Nature's

plant babies live in a peaceful nursery untroubled by the blasts which their bigger brothers meet: the tenderness which provides such an environment will be fully appreciated by little children.

Rainfall.—We measure rainfall in inches, and discuss the average yearly fall as forming water to the depth of 30 or 60 inches, as the case may be. However true this be as a combined measurement of individual showers spread over a long period of time, as a phenomenon it never occurs. A shower falls on a garden or a street, and we see the rain soak through the soil or race along the gutters. We never find the water heaped up in garden or street.

Because this cumulative method of measuring rainfall is suitable for meteorologists and students of climate, it does not of necessity follow that it is easily grasped by a child. Such a method is best relegated to the future, while for the present a measurement more easy of comprehension should be used.

Before discussing the method of measurement to be adopted, let us examine some facts regarding rainfall. First, rain falls in drops of varying size. In a shower of usual intensity, the drops are of four different sizes (sometimes more). Very careful observation shows that during a shower drops fall on the same particle of ground

at comparatively long intervals, and these drops are often of varying size. Plants or soil are not struck on the same place repeatedly by heavy drops; the rain varies in the size of the drop and therefore in the force of the blow. Again, in picturing the rainfall of any large city, we have to imagine a large number of somewhat restricted showers, for rarely is there rain over the whole city at one time. The following figures for Liverpool's average annual rainfall illustrate the variation of fall within a small area :—

Huskisson Dock . .	30 inches.
St. John's Gardens . .	27 ,,
Fairfield	33 ,,

One of the most successful ways by which the children can understand the amount of rainfall is to make observations in their own district and to register the results. For this purpose data of two kinds are essential :—

First, the number of days on which rain falls, the best unit for this purpose being the month.

Second, the average amount of rain which falls on each day. A rainy day for our purpose may be considered as one on which the shower of rain is sufficient to make the opening of an umbrella a necessity, even though the shower may last only for a short time.

The apparatus for measuring is simple; all that is needed is a glass jar with straight sides and a flat bottom, and a mouth equal in area to that of the base. The amount of rain caught in this jar can then be measured by any ordinary ruler placed against its side, and the amount read off in inches or parts of an inch. These observations need to be continued for long periods before any satisfactory average can be arrived at.

Observations in Liverpool show on an average sixteen rain days per month, with a mean fall of about one sixth of an inch during each day. This means that in Liverpool every other day is fine.

The Lake District (Seathwaite) has eighteen rain days per month, with nearly two-thirds of an inch of rain each day; these facts indicate that Seathwaite's average fall is rather more than four times as great as that of Liverpool. This result is not absolutely exact, but it does show a correct generalisation based on thirty years' observations. Such comparisons are illuminating, and are much easier for children to understand than the statement that Liverpool's rainfall is 30 inches and Seathwaite's 135 inches.

Temperature.—Heat is to some extent a personal experience and varies from day to day, not only according to the amount of heat given out

by the sun, but according to the temperament and physical variation of the child. Lessons discussing temperature in degrees should not be attempted until the children have had lessons on a thermometer and are acquainted with its use. In the meantime variation in temperature may be described by comparative terms, *e.g.*, those districts where the rivers are frozen solid during the winter and the whole area covered with snow may be described as having "great cold," and this term can be reserved for places having a mean winter temperature below zero. Those where the summer is too hot to allow white people to be exposed to the sun without protection may be said to be "very hot"; and this description can be used for a temperature over 68° F.

Temperature may also be discussed in areas, *e.g.*, the heat of the air in the garden may be compared with the heat of the classroom; this method will help in the appreciation of isothermal surfaces when the time comes for their discussion.

Climate study is so important a part of Geographical study that it is difficult to over-estimate the need for accurate observations on the part of the children and the careful interpretation of these under the guidance of the teacher.

IV

Maps

MAP work presents some of the most difficult problems which children have to face. Modern maps are the result of an evolution in the art of expression and are also a sign of the development of knowledge regarding the earth's surface. To find the beginnings of map-making we must go far back, and search among the ruins of the earliest civilisations. We find that maps grew out of a very early need of these communities, for it is on the banks of the Euphrates and the Nile that we find the earliest attempts.

The nearest approach to modern maps were those made and used by the ancient Greeks, culminating in the scientific cartography of Ptolemy.

During the middle ages a very interesting and suggestive alteration occurred. The scientific method used by the Greeks was abandoned; maps became highly pictorial and less accurate. Mountains were shown by pictures, seas dis-

tinguished by the monsters inhabiting them, and important religious centres by cathedrals; and this method continued even into the fifteenth century. The present method of map-making is a return to the earlier and accurate style. We are apt to forget this gradual development in dealing with maps for school use, and to think the present highly scientific production the only one available for children—forgetting too often that maps were necessary in the first case for fiscal purposes, for navigators, and for geographers, and were produced to aid these men in their daily work or thinking. Those for whom maps were made were men of experience and training. Later, when it was desired to make a popular appeal, the pictorial and legendary method was used. To-day we give to little children of untrained intelligence maps suitable for Greek philosophers; we expect the children to appreciate these, when they do not really need or desire them, and when their intelligence is so little developed that the map remains a mass of meaningless symbols.

The use of maps and their correct reading is essential, for no child can learn Geography unless he understands them. There is scarcely a business man who does not need continually to refer to an atlas; and no student of modern affairs can

do without a map. Our need of them continues as long as our interest in life remains intelligent and active. But maps require to be interpreted.

Let us begin by examining their structure.

It consists in the first place of a network of lines horizontal and more or less vertical. Within this network, outlines are drawn to represent the shapes of the countries, and within these outlines the character of the land is shown by symbols.

The foundation lines are themselves symbolic, and serve to indicate position on the earth's surface. The horizontal lines or parallels show position—north or south—and may be termed "Height of Sun lines," while the vertical lines show position east or west, and may be called "Time lines". The full significance of the Height of Sun and Time lines is best left for later discussion; but we must be prepared for children to notice the lines and to ask for explanations. And, since no satisfactory answers can at this stage be given, it is advisable to concentrate on other points in the map and to give only such information as is absolutely necessary, and yet to ensure that interest in these fascinating lines is maintained until the time arrives for full explanation. At first it will be sufficient to tell the children that the horizontal lines indicate the height of the sun at noon, and that increasing

numbers show decrease in height; and that the vertical lines denote noon time. Again, the arrangement of these horizontal and vertical lines differs in the same atlas, *i.e.*, maps are on different projections; and with the variation in projection there is a variation in size of the countries, particularly apparent in northern areas.

What is the true size of Greenland? Is it that represented on a map of Mercator's projection or on one of Mollweide's?

How large are the great forests of Siberia? Do they really cover as much land as is suggested in Mercator's map? If this is the case, surely the supply of timber is sufficient for the world's needs!

Does the Alaskan coast really take that curious sweep which Mollweide gives it in his map? Do maps and map-makers purposely confuse us, or is there something subtle and at first sight unintelligible, awaiting our fuller intellectual appreciation?

With many children of but average intelligence it may be possible to notice some of the peculiarities of these two projections. Does not the inequality in distance between the lines of latitude (sun lines) on Mercator's map call for remark or for further study? How strange it is that from 0°-25° is represented by one distance and from

60°-85° by a distance more than twice as great! Is it not true that, if Greenland were situated between 0° and 25° instead of between 60° and 85°, its length from N. to S. might appear less than half that shown on the map? Some such line of argument may be suggested to the children, and they may be helped to work out the problem in this simple way, so that Mercator's map will immediately strike them as one which is puzzling and therefore needs explanation.

Mollweide's map is rather more difficult to understand than Mercator's. The curious curvature of the N. and S. lines (except the middle one) gives the necessary clue to a correct appreciation of Mollweide's projection. Although curved, all these lines are absolutely N. and S. The strange shape of the quadrilaterals, especially those on the margins towards the N. and S., must also be noted.

Next, consider the symbols used to represent the surface features of a country :—

(*a*) Variation in height is shown by variation in colour.

(*b*) Rivers in blue.

(*c*) Railways in black.

(*d*) Cities by circles or squares.

(*e*) Seas by washes of colour.

The whole representation of the map suggests

something static, a country deprived of any movement. Think on the contrary what the real country shows to the children—hills of irregular slopes and varying heights with waving trees and fleeting lights and shadows; rivers in constant motion; railways, of which the main fact is not the permanent way but the rushing screeching trains; cities consisting of streets filled with traffic and people, pulsating with life and energy; seas with restless waves and rising and falling tides. The real country shows nothing static; movement is visible everywhere. How are we to reconcile these opposites—the world the child sees in continual motion with the map which represents this earth as motionless?

We are faced with these alternatives :—

1. To allow the children to divorce their experience of realities from their study of a map.

2. To help them to interpret the symbols so that these may suggest movement.

We dare not adopt the first, for it would close one important avenue of instruction; we are compelled to follow the second.

How can we do it?

There are several ways. One of the most effective is to lead the children step by step from realities to suggestive portrayal of realities and finally to symbols denoting realities. During

the lessons on the home life of children in other lands we naturally use pictures, and these may be made the first stage in map interpretation. The second stage should be the picture map, the third the orographical map. The intermediate stage of a picture map is an essential link in the chain. When railway companies want to impress the public with the advantages of any special area, they issue picture maps of the locality. When journalists wish to emphasise the terrible difficulties of warfare in any district, they publish picture maps. Such maps are intended to be suggestive to children of a larger growth who possess a certain amount of experience and education. We shall reach our goal more easily if we proceed gradually to a flat map and prolong the period of preparation, rather than pass abruptly from the living representation of a picture to the dead symbolism of a map. The true sequence is picture, picture map, orographical map.

The use of pictures is well known and requires little elucidation. As the picture is to be used as a step towards map interpretation, its geographical aspect needs to be emphasised. Important land forms should be named and any points remarked which suggest climate or denote vegetation ; and here again, as always, it is the children's impressions we want first to

elicit, and not merely to impose our ideas upon them.

Picture maps form the second stage; they need to be carefully used; and in the first place they should not be hung, but laid on the table or the floor and orientated correctly.

Distance should be carefully studied. Let the children discover what space on the map represents one week's journey, and how long it will take to journey from one place to another (see page 20). The character of the land needs to be discussed, the changes in vegetation should be noted and related to variations in climate.

The effect of the nature of the land and its accompanying vegetation should be connected with the life of the people, the father's occupation, the work of the mother, the games of the children. These and many other problems will be suggested, and to some extent answered by a good picture map.

The practice of using conventional maps too early cannot be too strongly condemned. The intelligence of the child must first be developed so that he is able to apprehend and to visualise the symbols used. In many children this power comes very late. To introduce maps too early in the study of Geography, that is, before this power of visualisation is present, tends to delay,

if not to prevent, the correct use of a map. It allows a child to be content with symbols—in such a case he sees always a map. What is needed is that he shall see, not a map, but the country as seen by the men who made the map.

After one to one and a half years of systematic work in Geography, during which the picture map has been used, it is time to prepare for the use of orographical maps. The first thing is that the children should clearly realise the differences in height which exist all around them and attempt to suggest these variations on a flat surface. Their own classroom is the place in which to begin this work. Here there are many levels—the floor, the platform, the desks, and so forth. These levels should be noted and discussed. Then a journey across the classroom can be imagined, which will provide all the essentials of contrast in altitude. This again should be discussed and profiles drawn to show the ups and downs in the progress. The discussion of methods of showing heights, other than that of profile drawing, will follow. Colours immediately suggest themselves to the children, and different ones are chosen to represent different levels. Children almost invariably suggest green for low and flat surfaces; and with little greater effort the idea of

brown for demonstrating heights is arrived at. Next, a map is made of the journey, but now not in profile but in colour. Floor level is shown by a stretch of green ; a low step up, by a patch of light brown or yellow ; a great height, by an expanse of dark brown. Immediately under this band of colours the children draw a profile, so that they may have a further opportunity of realising the immediate connection between colour and height. When the children have mastered the representation of the heights in their classroom by colour, they can proceed to discuss heights outside the school and to represent these too by colour. And, again, profiles must accompany these colour diagrams. When the children are thoroughly familiar with this representation of heights, they are ready to discuss orographical maps and to interpret some of the other symbols there used.

It is important to bear in mind that the first position of orographical maps, as of picture maps, should be horizontal, and that wherever possible these maps should be correctly orientated. This presents no great difficulty when each child has his own atlas ; and at first it is better to work without wall maps, for the orientation of an atlas is comparatively easy, while a wall map is more difficult to place correctly. The supreme need

is to help the child to visualise a map, and early lessons should be concentrated on this.

A true idea of distance is one of the first conceptions to be developed. It is desirable to have one unit of measurement, the distance covered by a week's march being one of the best, as has already been suggested when using picture maps.

Variation in colour as showing variation in height needs careful study. Sketches, profiles, and descriptions are useful aids, and frequently they can be used in conjunction, *e.g.*, profiles may be accompanied by drawings and descriptions given by the children. These three should be used continually, not only in the first lessons on map interpretation, but for many years, until visualisation becomes instinctive. Changes in temperature between the north and the south can be discussed and noted, together with the probable variation in vegetation and differing occupations of the peoples. Sketches comprising all these should be made by the children.

Let the first orographical map used be that of the home area ; then the pictures drawn by the children in illustration can be compared with the realities with which they are familiar. Next they can be helped to observe the symbols used, and to realise instinctively the realities for which the symbols stand.

By some such method, the children may be enabled to discover the secrets of a map, hidden within its symbols, and to gain a wonderful store of information, a clue to the human problems present in every country.

As the future peace of the world largely depends on the true appreciation of the needs and aims of the citizens of the world, we must utilise to the full the unique opportunities which Geography presents for its development. An intelligent and sympathetic attitude towards these aims will be potent in helping to understand and to solve the problems of the peoples. At school all we can do is to lay the foundation of this wide sympathetic world outlook, and if we begin with the little ones, it is more likely that such ideas will become fruitful.

V

The Illustrating of Geography Lessons

IN teaching little children there is need for continual revision, and all teachers find it essential to provide the children with an opportunity for the frequent re-statement of facts learnt, so that they may be woven into the fabric of their minds and become part of their mental "stock-in-trade".

The larger the number of senses called into action in such revision, the more satisfactory will be the result. Geography teaching offers facilities for a revision which should be many-sided, because it deals with life and its representation. Several methods may be used: acting is one of the most satisfactory.

Acting.—To be effective, acting should be the result of the children's own arrangement and should be exceedingly simple; the more spontaneous it is, the better it will serve its purpose.

It has been found useful to divide the class into two groups, one group to be the actors and

the second the audience, and later to allow the groups to change places, the actors becoming the audience, and the audience the actors.

Scenery as such is not essential. What scenery can be as effective as that supplied by a vivid imagination! The more immediately the imagination can seize on any commonplace article and by the strength of "make-believe" transform it until it "is" what it represents, the more valuable the training. The bare floor of the classroom is always present—what a stormy ocean it is, what a danger there is that Columbus will be wrecked as he sails over that heaving floor! Or again, how arid a desert it is—oh, the torments of thirst that the traveller suffers as he wearily trudges over its sandy wastes!

Costumes will vary according to the ingenuity and imagination of the children, and they should be very simple. A muff alone may suggest the fur clothing of the Eskimo, and a Panama hat the dress of a white man in the Tropics. The children's chief care is to look their parts: speeches are unimportant to them, perhaps because "What shall we do?" is much more interesting than "What shall we say?" and also because many children have great difficulty in expressing their ideas, and shrink from the attempt. One of the advantages of acting is the opportunity it pro-

vides for a simple and natural expression of ideas, —an essential in every child's training. To the teacher the speeches of the little actors provide the best test of judging the results of the lessons, and for this reason the words used should be as far as possible chosen by the children themselves. Suggestions may be needed during the acting, and help must be given by the teacher when it is called for; but even a brief experience gives the little ones a certain amount of confidence in themselves and of facility in expression. Nothing else is needed to make acting a keen joy but a strong imagination and a sympathetic and not too critical teacher.

When the acting is done by two groups, as suggested, it provides useful training in several directions. Some degree of organisation is necessary and should come from the children themselves; an exercise of public spirit is required, for the general effect is more important than the brilliance of any individual part, while the selecting of the essentials among the mass of material provides useful training. When the first group has finished acting, the second group, that is, the audience, is called upon to criticise the work of the actors, knowing fully that its own work will in the same way be subjected to criticism later. Very valuable results follow the

effort to think out an adequate representation of any scene, and to voice the feelings of the characters represented before so critical an audience as that supplied by companions who share the same lessons and the same play.

But it is sometimes found that acting takes more time than can conveniently be spared, and, if this be the case, simpler forms of dramatisation may be employed. In such cases gesticulation is very useful: a shiver is a vivid representation of the state of feeling of dwellers in the cold lands in winter; or the usual actions suggestive of personal discomfort contingent on great heat may reproduce that of dwellers near the Equator.

Another method is to ask a number of the children to stand in front of the class and to show by the postures they adopt the characteristic actions of the people they are representing.

Modelling.—Modelling is most useful when carried out by groups of children, each individual being responsible for some definite work. If the subject be life in an oasis, some children may make tents from cardboard, others, camels out of paper, and others again pots and pans of clay. Thus the combined work of the class will serve to represent the life of an Arab family. Many materials are useful for modelling, cardboard, paper, clay, etc. Perfection of representa-

tion is not the aim, but rather the adaptation of the material to the ideas and power of the children. Clear and correct impressions may be given by very simple models, when grouped by the children with the teacher's aid. Older children may use ordinary blocks of soap, from which they can cut models. Soap models may shrink, but they do not break or crush ; and such models of houses and churches are very interesting, since the soap may be painted—red roofs and brown doors go a long way to reproduce "real" houses.

Models may be placed on a base of plasticine or clay. Houses, tents, camels standing on such a foundation have the great advantage over pictures that they can be viewed from all sides. This gives reality and life to the inanimate model.

Painting.—Painting, and drawing in coloured chalks, or in pencil, provide an excellent test of the correctness of the children's ideas, and few suggestions are needed in this connection. But it may be pointed out that some children are inclined to under-estimate and others to exaggerate the value of their work, and it is advisable to correct this. Full and frank criticism by the members of the class should be invited, and the children may thus be helped to a true estimate of their own efforts.

The teaching of little children is capable of being a continuous inspiration to a teacher. The joy of the little ones in their work is very great, and, their sympathy once aroused, they are prepared to lose themselves in what they learn, and want to give of their fullness to those who need. It is natural to a child with little idea of remoteness and none of impossibility to say, "Can't we help?" With such a mental attitude, it is not difficult for Geography teachers to use this splendid responsiveness for the training of the children as world-citizens in whom sympathy shall be ever ready and to whom the far off races shall be as "brothers beloved".

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